

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 1. (Currently Amended) An isolation system with analog communication across an
2 isolation barrier comprising:
3 an isolation barrier circuit having at least one isolation element;
4 a digital to analog circuit configured to provide a constant average
5 analog output signal to the isolation barrier and having an input for receiving an input
6 digital signal to be communicated across the isolation barrier, said digital to analog circuit
7 including an encoder circuit responsive to said input digital signal to provide a digital
8 signal, and a digital to analog converter responsive to said digital signal to provide to said
9 isolation barrier said constant average analog output signal; and
10 an analog to digital circuit having an input coupled to the analog
11 output of the isolation barrier circuit for providing a digital output signal.

1 2-3. (Cancelled)

1 4. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes an analog to digital converter responsive to said input analog signal from said

3 isolation barrier to provide a digital signal, and a decoder circuit responsive to said digital
4 signal to provide said digital output response.

1 5. (Cancelled)

1 6. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes an analog to digital converter.

1 7. (Original) The isolation system of claim 1 in which said digital to analog circuit
2 includes a digital to analog converter.

1 8. (Original) The isolation system of claim 1 in which said digital to analog circuit
2 includes a termination resistance connected with said isolation barrier.

1 9. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes a termination resistance connected with said isolation barrier.

1 10. (Original) The isolation system of claim 1 in which said isolation element
2 includes a capacitance.

1 11. (Original) The isolation system of claim 1 in which said isolation element
2 includes a transformer.

1 12. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes a common mode interference signal sensing circuit and a summing circuit for
3 removing the common mode interference signal from the received analog signal from the
4 isolation barrier.

1 13. (Original) The isolation system of claim 1 in which said digital signal to be
2 communicated across said isolation barrier includes data.

1 14. (Original) The isolation system of claim 1 in which said digital signal to be
2 communicated across said isolation barrier includes control information.

1 15. (Original) The isolation system of claim 14 in which said digital signal to be
2 communicated across said isolation barrier includes reference and calibration information.

1 16. (Original) The isolation system of claim 1 in which said digital signal to be
2 communicated across said isolation barrier includes data and control information.

1 17-18. (Cancelled)

1 19. (Previously Presented) The isolation system of claim 4 in which the input
2 analog signal is a constant average signal.

1 20. (Previously Presented) The isolation system of claim 5 in which the input
2 analog signal is a constant average signal.

1 21. (Previously Presented) A bi-directional isolation system with analog
2 communication across an isolation barrier comprising:

3 an isolation barrier circuit having at least one isolation element;

4 a first digital to analog circuit configured to provide a constant
5 average analog output signal to a first side of the isolation barrier and having an input for
6 receiving an input digital signal to be communicated across the isolation barrier;

7 a first analog to digital circuit having an input coupled to the first
8 side of the isolation barrier circuit;

9 a second digital to analog circuit configured to provide a constant
10 average analog output signal to a second side of the isolation barrier and having an input
11 for receiving an input digital signal to be communicated across the isolation barrier; and

12 a second analog to digital circuit having an input coupled to the
13 second side of the isolation barrier circuit.

1 22. (Original) The bi-directional isolation system of claim 21 in which the input
2 digital signals are communicated simultaneously across the isolation barrier circuit.

1 23. (Original) The bi-directional isolation system of claim 21 in which the input
2 digital signals are communicated alternately across the isolation barrier circuit.

1 24. (Original) The bi-directional isolation system of claim 21 further including at
2 least one echo cancellation circuit for removing a local echo signal from the input of at
3 least one of said first and second analog to digital circuits.

1 25. (Previously Presented) The isolation system of claim 1 in which the analog to
2 digital circuit is configured to decode the constant average input analog signal.

1 26. (New) An isolation system with analog communication across an isolation
2 barrier comprising:
3 an isolation barrier circuit having at least one isolation element;
4 a digital to analog circuit configured to provide a constant average
5 analog output signal to the isolation barrier and having an input for receiving an input
6 digital signal to be communicated across the isolation barrier, said digital to analog circuit
7 including a digital to analog converter with an input for receiving said input digital signal
8 and an analog modulation circuit responsive to said digital to analog converter for providing
9 said constant average analog output signal; and
10 an analog to digital circuit having an input coupled to the analog
11 output of the isolation barrier circuit for providing a digital output signal.

1 27. (New) The isolation system of claim 26 in which said analog to digital circuit
2 includes an analog demodulator circuit responsive to said input analog signal from said
3 isolation barrier, and an analog to digital converter responsive to said analog signal to
4 provide said digital output signal.

1 28. (New) The isolation system of claim 26 in which said isolation element
2 includes a capacitance.

1 29. (New) The isolation system of claim 26 in which said isolation element
2 includes a transformer.

1 30. (New) The isolation system of claim 1 in which the digital signal provided by
2 said encoder circuit includes two digital values in response to each digital value of said
3 input digital signal to said encoder circuit.

1 31. (New) The isolation system of claim 30 in which the output codes of said
2 encoder are thermometer encoded.

1 32. (New) An isolation system with analog communication across an isolation
2 barrier comprising:

3 an isolation barrier circuit having at least one isolation element;
4 a digital to analog circuit having an input for receiving an input

5 digital signal to be communicated across the isolation barrier, said digital to analog circuit
6 including means responsive to said input digital signal for providing a constant average
7 output signal to the isolation barrier; and
8 an analog to digital circuit having an input coupled to an analog output of the
9 isolation barrier circuit for providing a digital output signal.